TRANSMITER AND RECEIVER PAIR
SINGLE MODE
XFO1013TRS SERIES

TRANSMITER : XFO1013TS / XFO1013TM
RECEIVER: XFO1013RS / XFO1013RM

1-CHANNEL DIGITALLY ENCODED VIDEO /
1-CHANNEL BI-DIRECTIONAL DATA MULTIPLEXER

# USER'S MANUAL

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# GENERAL INFORMATION

## Introduction:

The OXIC XFO-1013TRS Series video and data transmitter and receiver support simultaneous transmission of one channels of 8-bit digitally encoded video and one channel of bi-directional data over one multimode and single-mode optical fiber. The modules are universally compatible with major camera systems and support RS-485 and RS-232 data protocol. Plug and Play design ensures the ease of installation and electronic and optical adjustments are never required.

## Model Number

| Unit Type | Model Number |
|---|---|
| One-channel Digitally Encoded Video/One-channel Data Transmitter | XFO-1013TS |
| One-channel Digitally Encoded Video/One-channel Data Receiver | XFO-1013RS |

## Technical Specifications:

**VIDEO**

| | |
|---|---|
| Video Input： | 1 volt pk-pk (75 ohms) |
| Input/Output Channels： | 1 |
| Bandwidth： | 5 Hz - 8 MHz |
| Bit Resolution： | 8-bit |
| Differential Gain： | < 2% |
| Differential Phase： | < 0.6° |
| Tilt： | < 1% |
| S/N Ratio： | 67dB (Weighed) |

**DATA**

| | |
|---|---|
| Data Interface： | RS-485/RS-232 |
| Data Channel： | 2 |
| Data Rate： | 100Kbps |
| Bit Error Rate： | $10^{-9}$ |

| | |
|---|---|
| **WAVELENGTH** | 850/1310nm Multimode<br>1310/1550nm Singlemode |
| **OPTICAL EMITTER**: | Laser Diode |
| **NUMBER OF FIBERS** | 1 |

**CONNECTORS**

| | |
|---|---|
| Optical： | ST |
| Video： | BNC |
| Data： | Shield RJ-45 Plug |

**GENERAL**

| | |
|---|---|
| Power Supply： | DC12V @ 600mA |
| Size： | 195mm x 191mm x 36mm |
| Construction： | Aluminum |
| MTBF： | > 100,000 hours |
| Operating Temp： | -30℃ to +50℃ |
| Storage Temp： | -40℃ to +85℃ |
| Relative Humidity： | 0% to 95% (no condensing) |

**INDICATOR**

Module

| | |
|---|---|
| Blue： | Video Sync Present |
| Blue： | Data Sync Present |
| Orange： | Power On |

**OPTICAL POWER BUDGET**

Optical transmission distance is limited to optical loss of the fiber and additional loss caused by connectors, splices, and patch panels.

| Fiber | Wavelength | Transmitter | | Receiver | | Optical Power Budget | Max Distance |
|---|---|---|---|---|---|---|---|
| | | Model | Output | Model | Sensitivity | | |
| Singlemode | 1310nm | XFO-1013TS | -5 dBm | XFO-1013RS | -26 dBm | 21 dB | 30km |

**CAUTION!**
The transmitter unit contains a laser-emitting diode located in the optical connector. This device emits invisible infrared electromagnetic radiation that can be harmful to human eyes. The radiation from this optical connector, if viewed closely without any protection, may cause instantaneous damage to the retina of the eye. Direct viewing of this LED should be avoided at all times.

# INSTALLATION INSTRUCTIONS

## Installation Procedure

The OXIC XFO-1013TRS video transmission systems series are preset for immediate use. There are indicator LEDs on the units for monitoring the real-time status of video, data and power. The following instructions describe the typical installation procedure and the function of the LED indicators located on each unit.

1. Connect the video source (camera) to the video input BNC connector on the transmitter unit using coaxial cable.
2. Connect the video output BNC connector on receiver unit to the video monitor using coaxial cable.
3. Connect the fiber optic cable between the transmitter and receiver
4. Apply the power supply to both the transmitter and receiver

5. When the power is applied, the orange POWER LED will light, indicating the presence of operating power. The blue VIDEO LED and the blue DATA LED will give an indication as stated in the following page.
6. The system should now be operational.

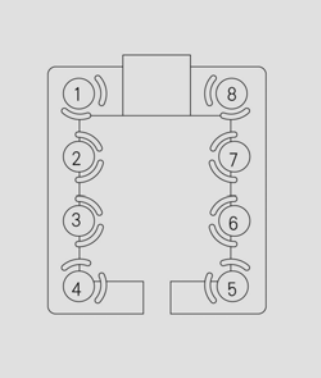
## System Terminal Block Connections

The various input and output connections for OXIC XFO-1013TRS Series system are as follows:

**Video Input or Output:** BNC Connectors

**Data RS-485 Connection:**

Terminal No.1——①: RS-485 (+)
Terminal No.2——②: RS-485 (-)




*Terminal Block for Data Connection

**Camera Site**

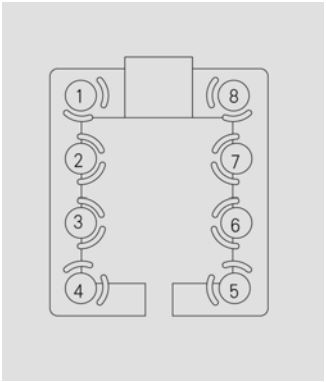
Connect the Terminal No.1——① in the terminal block for data connection to RS-485 (+) of the controlled unit (pan/tilt, dome), and connect the Terminal No.2——② in the terminal block to RS-485 (-) of the controlled unit (pan/tilt, dome).

**Control Site**

Similarly, connect the Terminal No.1——① in the terminal block for data connection to RS-485 (+) of the controlling unit (Keyboard Controller, Matrix, DVR), and connect the Terminal No.2——② in the terminal block to RS-485 (-) of the controlling unit (Keyboard Controller, Matrix, DVR).

**Data RS-232 Connection:**

Terminal No.6: Signal being transmitted out over fiber
Terminal No.7: Signal being received in from fiber
Terminal No.8: Ground




*Terminal Block for Data Connection

**Camera Site**
Connect the Terminal No.7 (232T) in the terminal block connected from the transmitter to RS-232 (232R) port of the controlled unit (pan/tilt, dome), and Terminal No.8 (GND) is used for ground connection.

**Control Site**
Connect the Terminal No.6 (232R) in the data cable from the receiver to RS-232 Port (232T) of the controlling unit (Keyboard Controller, Matrix, DVR), and the Terminal No.8 (GND) is used for ground connection.

## Indicator LEDs

The stand-alone units have integral LEDs that are used to monitor the state of the unit. There are one video LED, one power LED and four data LEDs on each unit. One, labeled as “PWR”, lights when operating power is present. Another, labeled as “VID”, lights when the video input/output signals are detected. The other one, labeled as “DATA 1, DATA 2, DATA 3, DATA 4”, among them “DATA 2, DATA 3, DATA 4” are normally on (unavailable), and “DATA 1” blink at the rate of the operating data. As shown in the diagram in the following,

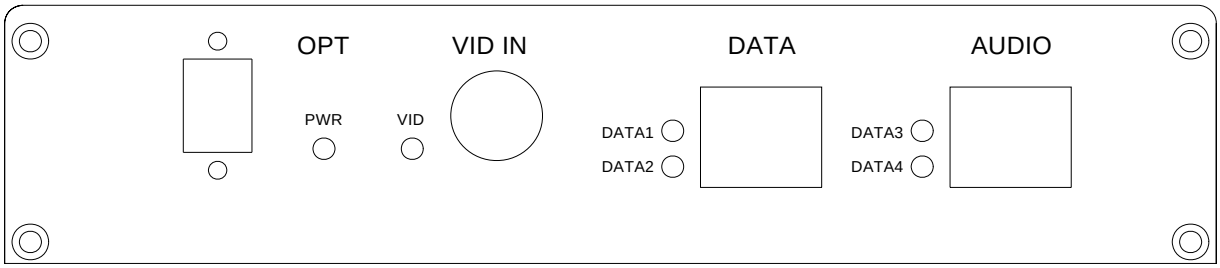
**TRANSMITTER and RECEIVER:**

Power: ON: (Orange) Indicates that correct power has been applied

## Transmitter:

Video: OFF: Indicates no video detected on input BNC connector
(No Video present on input BNC)
ON: (blue) Indicates video detected on input BNC connector
(Video present on input BNC)

Data (DATA1): OFF: Indicates no data detected on the transmit data cable
Blinking: (Blue) Indicates data transmitted at the rate of the operation data.



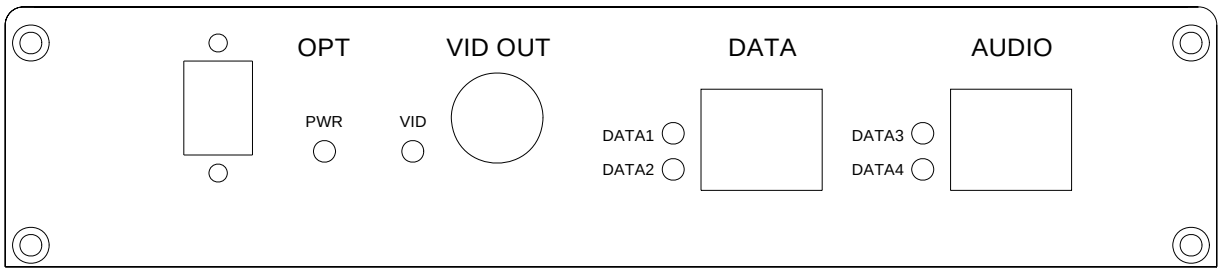

***Front Panel of XFO-1013TS (Transmitter)**

*Audio RJ-45 Port is expandable for audio tranmission

## Receiver:

Video: OFF: Indicates no video present on output BNC connector
(No Video present on output BNC)
ON: (Blue) Indicates video detected on output BNC connector
(Video present on input BNC)

Data (DATA1): OFF: Indicates no data detected on the receive data cable
Blinking: (Blue) Indicates data received at the rate of the operation data.




***Rear Panel of XFO-1013RS (Receiver)**

*Audio RJ-45 Port is expandable for audio tranmission

# TROUBLESHOOTING

## Optical Fiber

The OXIC XFO-1013TRS Series is available with most applications using multimode or single mode optical fibers. Please be certain that the correct size and type of the fiber is being used for the particular mode transmitter/receiver combination.

Also be certain that the attenuation and bandwidth of the fiber optic cable being used is within the range of the system's loss budget specifications.

## General

Any dirt or dust may easily pollute or block the fiber from accepting or radiating light. Therefore, please try to keep the optical connector clear and always use the dust caps whenever the connector is exposed to air. It is suggested that the tip of the optical connected should be carefully cleaned with a lint-free cloth moistened with alcohol from time to time.

The status of any of the VIDEO LED should provide the first clue as to the origin of any operational failure. If the VIDEO LED on the receiver unit is off, it usually means that the fiber is broken or has too much attenuation.

Please also make sure that the transmitter and the receiver are not used in opposite position

If the system is still not working after examining the above possibilities, please contact our Customer Service Department for further assistance

## Data Link

Even when installed exactly as directed, it is possible that the data/audio function may fail to operate properly. If these problem occurs, first please check the data cable, then check whether the data cable connector is firmly inserted into the RJ-45 port.

If the system is still not working after examining the above possibilities, please contact our Customer Service Department for further assistance

# LIMITED WARRANTY

Tiandy Tech guarantees two (2) year repair at no charge and lift-time maintenance at prevailing rate from the date of delivery.

Tiandy Tech series products are warranted to be free from defects in materials or workmanship for one year from the date of retail purchase. We reserve the final right to judge the malfunction of the products.

What is not covered by this warranty:

- Over one-year warranty period
- No warranty maintenance for appearance failure
- Damage incurred in transportation, loading & unloading or carrying.
- Damage resulting from any product modification, alteration or adjustment not authorized by Tiandy Tech
- Damage from misuse, abuse, accident and unsuitable physical and operating environment.
- Maintenance of the accessories such as fuse, one-off battery etc.
- Damage from acts of God such as fire, earthquake, lightning, flood etc.

Tiandy Tech reserves the right of final interpretation and modification to the above items. All the warranty information stated above is subject to change without notice.